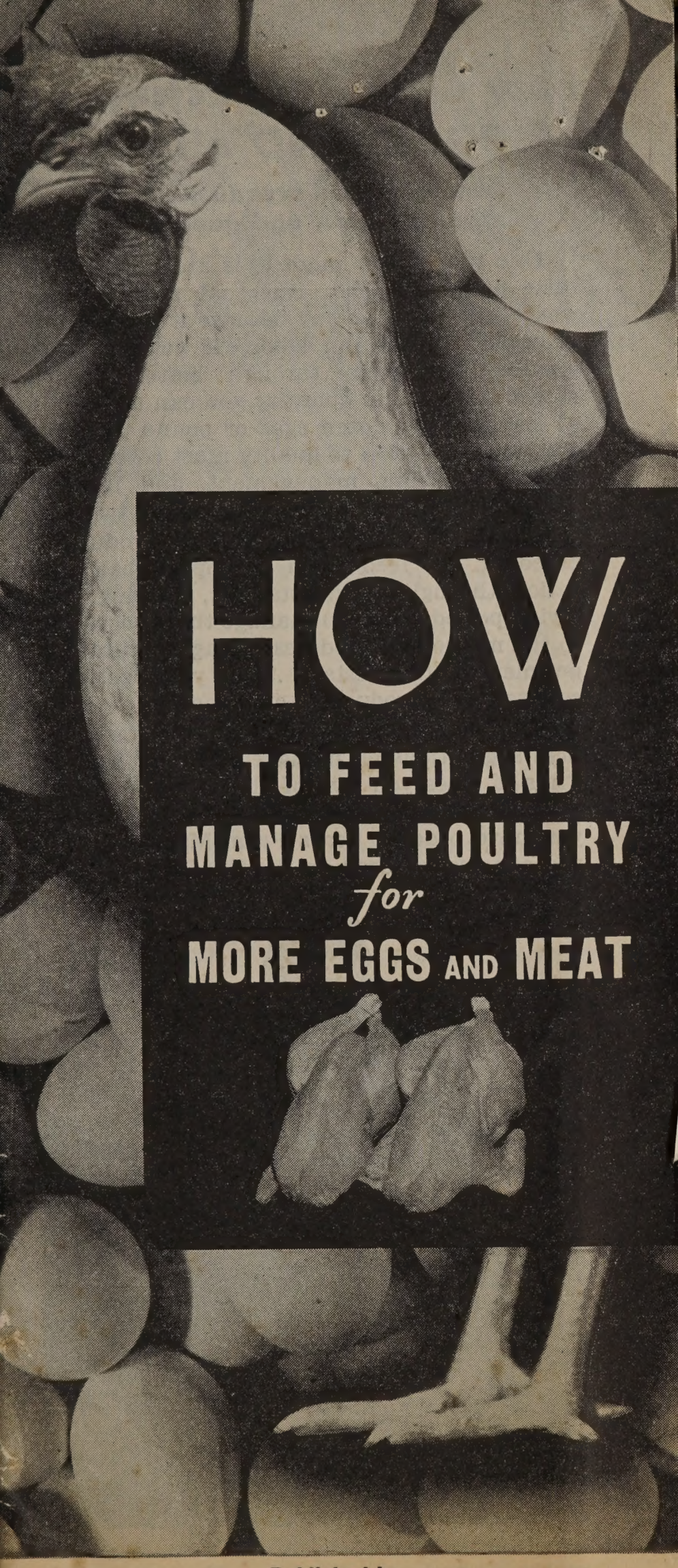


HOW

TO FEED AND MANAGE POULTRY *for* MORE EGGS AND MEAT

Published by
SEARS, ROEBUCK AND CO.

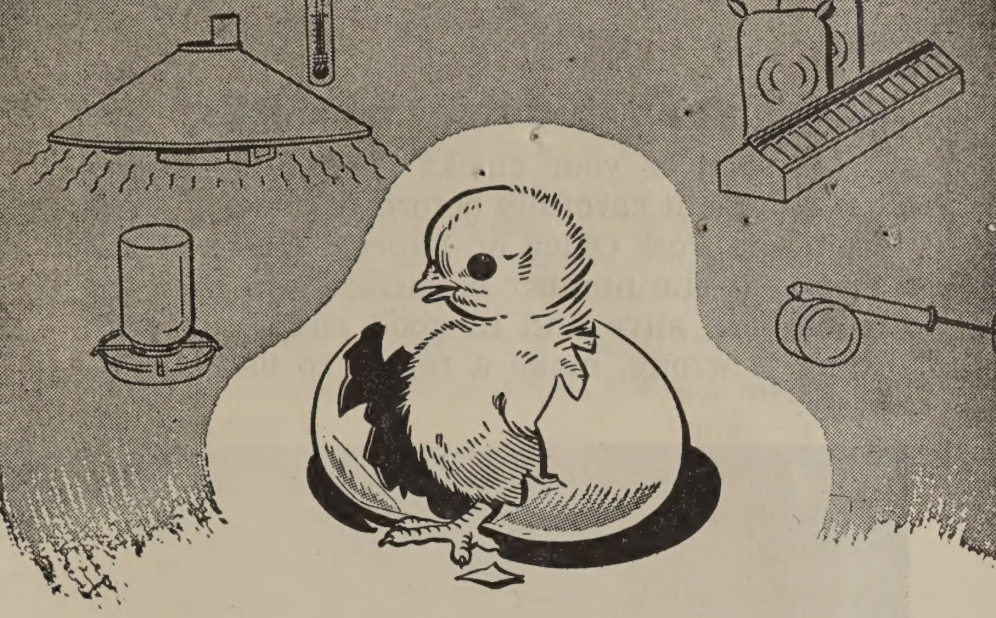
Low Cost Production of EGGS AND MEAT

Demands good breeding, good management, and good feed

One way to get more eggs and meat is to raise more chickens. But that alone is the wasteful, expensive way because it takes more equipment, feed, and labor. If you plan increased production through better quality rather than bigger quantity you can achieve it at less cost per dozen eggs or pound of meat. But your attention to quality must cover three points: breeding, management, and feeding. One will not work without the other two.

If you (1) buy chicks with high-production breeding, (2) feed them a properly-balanced ration throughout the starting, growing, and laying periods, and (3) manage them according to the methods proved best by agricultural experiment station tests . . . then you'll get good results: high production at low cost.

This manual is designed to give you practical suggestions on management and feeding. Thus it gives you two of the three necessary points for successful poultry raising. (And if you have ordered Sears Farm-Master Chicks, you can rest assured on the third point!)



STARTING CHICKS

A good start now means more profits later

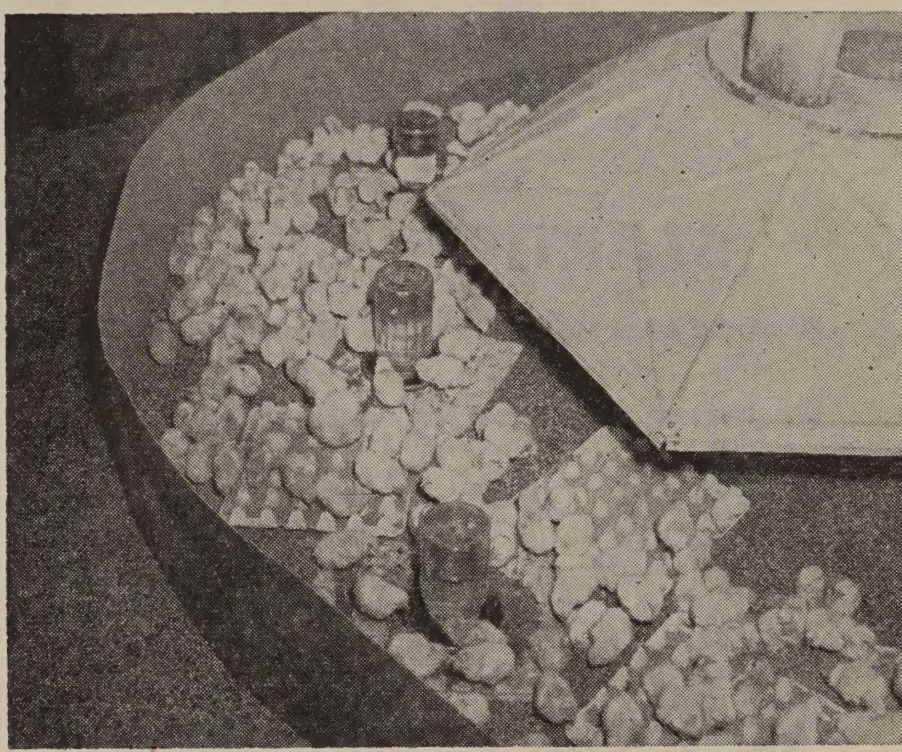
Prepare the chicks' quarters

Sanitation — strict, thoroughgoing sanitation — is a lot easier and cheaper than treating poultry for parasites and disease. Three or four days before your chicks arrive, make sure that the brooder house is clean and sanitary. First, take out of the house all removable equipment. Then scrape out all loose material. Then saturate an old broom with lye water, and use it thoroughly on floor and walls. One can of lye to 12 gallons of water will make a solution of the proper strength. After scrubbing, spray the whole interior with a good disinfectant solution made for the purpose. But remember that surfaces must be clean before any disinfectant can do its work.

Next, clean the equipment that goes into the brooder house, such as brooder stove, fountains, and feeders and make sure that the size and amount of equipment is sufficient for the quantity of chicks you plan to brood. Also have on hand an ample supply of feed, litter, and fuel. About 48 hours before you expect the chicks to arrive, start the brooder stove to warm and dry the house and make sure that the burners and heat-regulating device are working properly.

Check your shipment of chicks

As soon as your chicks arrive, check over the shipment carefully before you accept them from the Post Office or Express Office. Make sure that the number is correct and that the chicks are alive and in good shape. If anything is wrong, make a report to us immediately.



Egg case flats are used for the mash until the chicks learn to eat. After two or three days they will be replaced with feed hoppers. Note that the chicks have plenty of room to move around.

Give chicks room to live and grow

Crowding is perhaps the greatest danger to your poultry success — the greatest single cause of trouble. This applies to chicks, growing stock, and layers. For starting baby chicks, plan on at least two square feet of floor space per chick. They must have room to live and grow and move about. Slow growth, uneven development, uneconomical use of feed, and high death rate are all caused by crowding. Furthermore, extra work and poor sanitation always result from too little space. Measure your brooder house space and order your chicks accordingly. Rather than start a big brood and lose half of them (and, of course, weaken the surviving half), it is far better to start half as many and develop all or most of them into profitable layers.

Provide fresh air without drafts

Chicks need an abundant and constant supply of fresh air, and it should be supplied

without drafts. A good rule is to provide three square feet of ventilating area for every 60 square feet of floor space. It is a good plan to fit the openings with muslin-covered frames, adding an extra thickness of cloth in extremely cold weather. When the weather becomes warmer and the chicks older, these frames can be removed.

Brooding temperature

Temperature should be taken at the edge of the hover. Brooding may start with a temperature of 90° to 95°. Reduce the temperature about 1° each day until 75° is reached, and hold it there as long as heat is required. The chicks should be free to move up to the source of the heat when they want to, and move away from it when they get too warm. In general, the lowest temperature that keeps your chicks comfortable is both the best and the cheapest. The action of the chicks is the most accurate temperature guide. They need even temperatures rather than excessively high ones.

Allow room to eat and drink

The entire brood should be able to eat and drink at the same time. If the chicks have to fight for eating or drinking space, either through overcrowding or insufficient equipment, the lack shows up in slow and uneven growth. For the first two or three weeks, figure on one inch of feeder space per chick. After that time, double the amount of space — 2 inches of feeder per chick.

Chicks should have fresh, clean water (with the chill taken off) before them at all times.

Use two 1-quart fountains per 100 chicks first 3 weeks.

Use two 1-gallon fountains per 100 chicks after 3 weeks.

A hundred chicks will drink five or six quarts of water daily for the first two weeks, and after that water consumption increases considerably. As the chicks grow older, add more fountains so that they never have trouble in getting plenty of water.

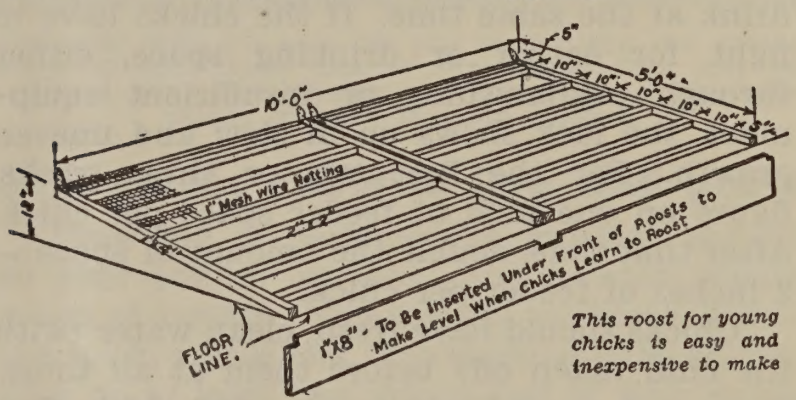
Keep litter clean and dry

Chicks need a warm, clean, dry floor. To provide these conditions is the purpose of litter. Good litter is absorbent, but not dusty or chaffy. Peat moss, wood shavings, fine-cut straw, peanut shells, oat hulls, crushed corn cobs, ground sugar cane, sawdust, tanbark,

or sand all make good litter. Of these materials peat moss is the most absorbent. There are also many good commercial litters on the market. The litter should be turned over frequently to keep it dry, and replaced when it becomes too moist or when filth accumulates. We recommend the deep, or built-up, litter for chicks as well as grown birds. See page 19.

Teach early roosting

If roosts are provided, chicks will start to use them much earlier in life than most people think. And it is to your advantage that they do so, for early roosting habits avoid crowding and piling up and tend to make growth faster and more uniform. Build a roosting frame like the one illustrated, and cover it with inch-mesh poultry netting. This roost should be installed when the chicks are about three weeks old. Hinge the frame to the north wall about a foot above the floor, and let the front end rest on the floor. As the chicks grow older, raise the front of the frame, until at the age of eight weeks it is about eight inches from the floor. A solid board in front will keep the chicks away from the droppings.



This roost for young chicks is easy and inexpensive to make

Use chick guards

Two sorts of guards are necessary to control the chicks. The first few days they must be kept from wandering too far away from the heat. Wire mesh poultry netting, building paper, or corrugated cardboard will make a suitable guard. It should be cut about a foot high and placed in a ten to twelve foot diameter circle around the brooder stove. After two or three days, gradually enlarge the circle until the chicks are finally given the run of the brooder house. The second kind of guard is to keep the chicks from huddling or piling up in corners. Use strips of the same sort of material to round off the corners of the brooder room.

FEEDING BABY CHICKS

The proper balance of high quality nutrients is essential

Before discussing the methods of chick feeding, a few remarks about feed quality are in order. These apply to growing and mature stock as well as to baby chicks. Poultry has different nutritive requirements at different stages of growth; and for good results as well as economy in feeding, it is necessary to meet these requirements adequately. We strongly recommend the use of good commercial poultry feeds — or commercial concentrates to balance your own grain if you have a plentiful supply. These products are formulated according to the needs of poultry as determined by experiment station research and tests. They have the proper balance of all the known nutrients: carbohydrates, fats, proteins, minerals, and vitamins. Furthermore, being mixed with special modern machinery, they have the right granulation or consistency for poultry. It is very unlikely that any poultry raisers could make as good a feed at home; and if he could, it would cost him far more than a commercial product of equal quality. The most satisfactory and most economical plan is to choose a commercial feed or concentrate made by a reliable mill, and stick to the same brand throughout the starting, growing, and laying periods.

Feeding chicks . . first week

Your chicks are ready to eat just as soon as you get them, but it is necessary to teach them how. The first day, put some starting mash, some chick-size scratch grain, and some chick-size hard granite grit on some cardboard laid flat on the litter. Dip the beaks of a few chicks into the feed. They will then start eating, and the others will readily imitate them. After two or three days, take out the cardboard and start using the feed hoppers. For very young chicks, frequent small feedings, about two hours apart, are best. Always supply plenty of fresh water with the chill taken off.

Second to fourth week

By this time the chicks are able to reach the bottom of the hoppers. Feed the mash, grain, and grit in such quantities that they will clean up all the feed at least once a day. This will prevent the feed from getting stale. However, never let the chicks be without feed for more than an hour. Don't forget to provide large hoppers and increase the total amount of hopper space as the increasing size of the chicks makes it necessary. Keep plenty of water before the chicks, and keep it clean. A good disinfectant in the water is advisable in helping to guard against disease.

Fourth to eighth week

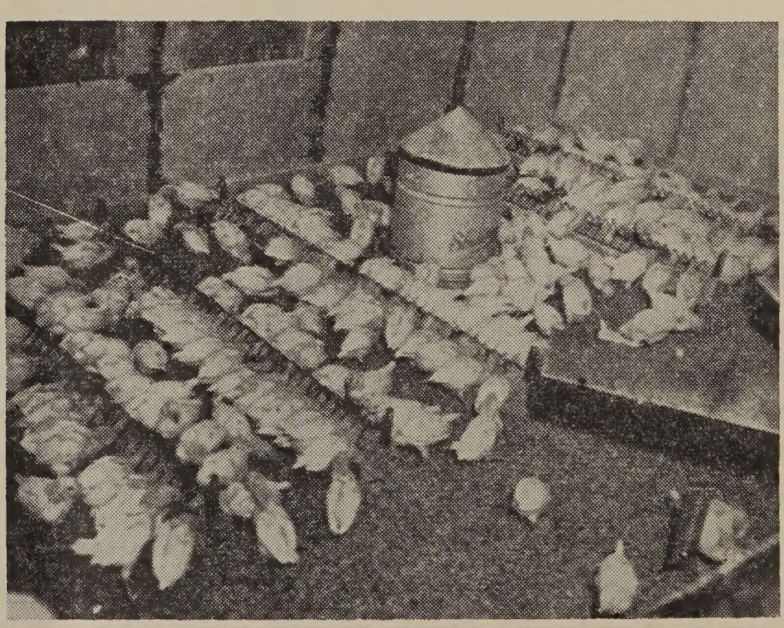
At this time the feeding of some oats, in addition to the mash, scratch, and grit, is often recommended. The oats should be rolled, for whole oats are too bulky for chickens under 12 weeks old. At some time during this period — the age recommended by your feed dealer or the manufacturer of the feed you are using — gradually start changing the chicks over from starting to growing mash, and from chick-size grain and grit to intermediate size.

Feeder space requirements

— 1 inch per chick first 3 weeks

— 2 inches per chick from 3 to 6 weeks

— 3 inches per chick after 6 weeks



Chicks grow fast — so don't forget to provide more feeding and watering space as they get bigger.

CHICK MANAGEMENT SCHEDULE

FIRST WEEK

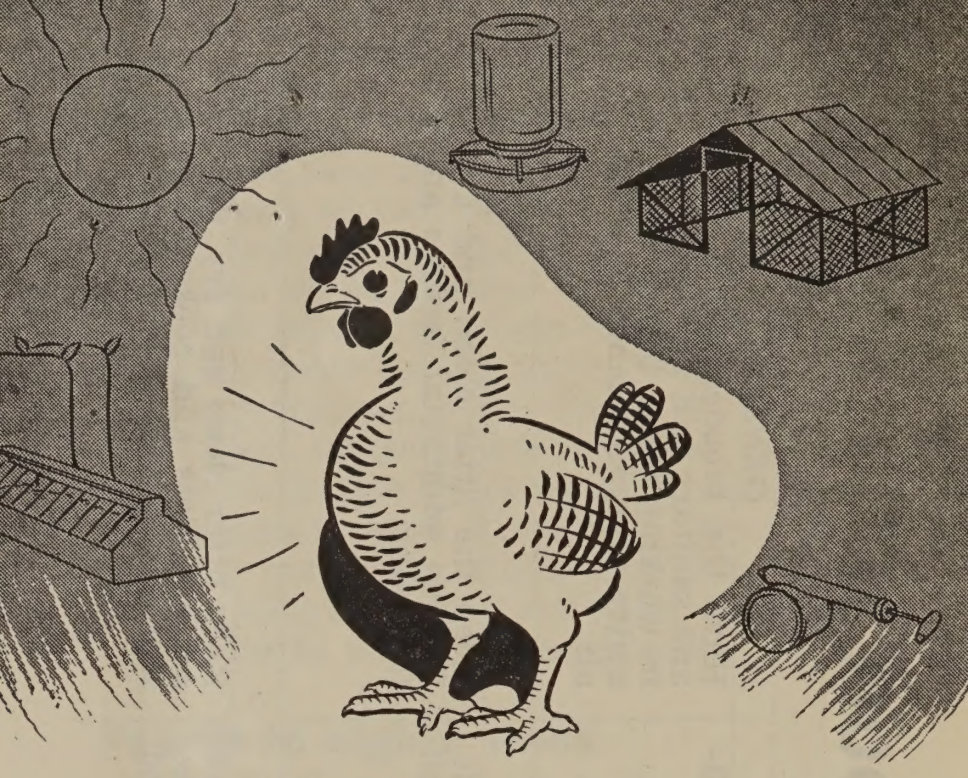
TEMPERATURE	*FEED*	*GRIT*	*GENERAL*
95° — take temperature at the edge of the hover.	Put starting mash and chick size scratch grain on cardboard the first 2 or 3 days; then in hoppers. Supply fresh clean water with the chill taken off.	Have chick-size grit available in hoppers.	Have the brooder house clean and sanitary and all equipment in working order before chicks arrive. Supply plenty of fresh air.

SECOND TO FOURTH WEEK

Reduce gradually each week so that 85° is reached by the end of the 4th week.	Continue mash, and chick-size scratch grain in hoppers. Plenty of clean water all the time. Increase feeding and watering space as chicks grow.	Continue chick-size grit. Charcoal and oyster shell may also be fed.	Keep the litter clean and dry. Provide additional feeders and fountains.

FOURTH TO EIGHTH WEEK

Reduce gradually each week so that 70° to 75° is reached at the end of the 7th week.	At the 6th to 8th week start changing gradually to growing mash and intermediate-size scratch grain. Plenty of clean water all the time.	At the 7th or 8th week change to intermediate-size grit, charcoal, and oyster shell.	Keep litter clean and dry. Separate pullets and cockerels as soon as you can.



GROWING PULLETS

Good range pays for itself

The cockerels should be separated from the pullets just as soon as they can be identified, for cockerels develop faster than pullets, and both sexes will do better when separated. If they are raised together the stronger cockerels crowd the pullets away from the feed hoppers and roosts, causing a set-back that means a loss in egg production later on. The cockerels — except those that are to be kept for breeding purposes — should be fattened for market *(see page 28)*. The pullets should be handled as outlined below.

Rotate growing range

When your pullets are eight to ten weeks old, it is time to change your management and feeding practices from those of the starting period to those of the growing period. Growing range for the pullets is very important and it should be planned well in advance of the time they are ready to use it. The best plan is to select three separate areas that can be used in a three-year rotation, as indicated by the diagram. Some poultry raisers prefer four areas for four-year rotation. These areas should not receive drainage from one another, or from other land on which poultry has been raised recently. This rotation is a sanitary measure to help control worms and coccidiosis. Worm eggs and the parasites that cause coccidiosis hibernate in the soil; and it takes at least two years without hosts to starve them out.

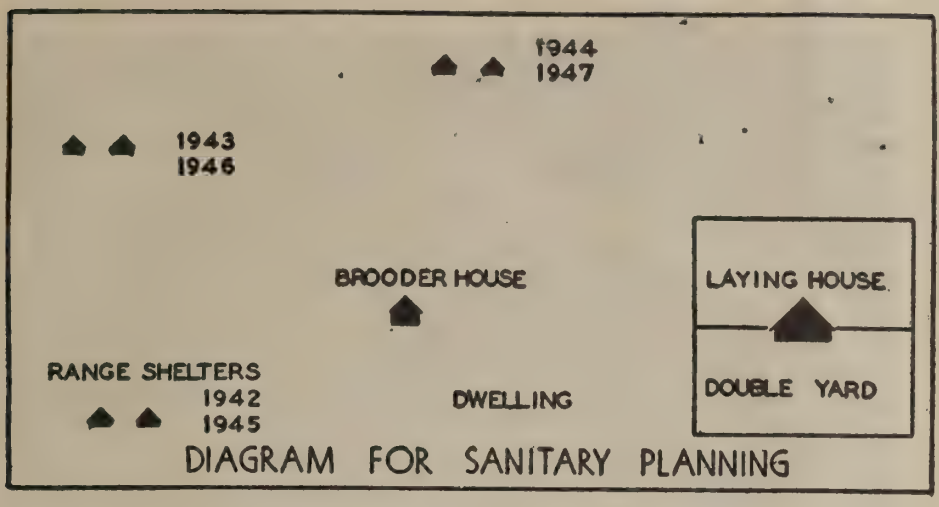


DIAGRAM FOR SANITARY PLANNING

Have shade and pasture on range

Next to being clean, the most important qualifications of pullet range are shade and pasture. Chickens cannot adjust themselves to extremely hot weather as well as most other farm stock, so the range should provide shade from trees, corn or other tall plants, or constructed shelters.

Probably no class of livestock will give higher returns per acre from pasture than poultry. Alfalfa, clover, sudan grass, and soybeans all make good range. This green feed supplements the grain and growing mash you feed pullets — it does not take the place of them.

Provide range shelter

A good range shelter is one of the most important pieces of poultry equipment. Pullets on range are still growing, and as they develop they need more space for living quarters during bad weather and for roosting at night. A range shelter about 10 x 12 feet will accommodate 100 pullets. It happens too often that poultry raisers grow good pullets up to the age of ten weeks or so and then give them a setback because of crowded quarters. A range shelter similar to the one illustrated is not difficult to build, and it can easily be moved from place to place.

Started chicks

If you do not have brooding equipment, or if you want to save the work of getting your chicks past the first crucial period, buy Farm-Master Started Chicks. These are four week old chicks that have been started with modern equipment in sanitary surroundings and have gotten the best of feed and care. They're off to a good start.

The single most important piece of equipment in poultry raising is a good range shelter for growing pullets.

FEEDING PULLETS ON RANGE

Growing mash is important

After the pullets are six to ten weeks old — at the time recommended by the manufacturer of the poultry feed you are using — they should be changed gradually from starting mash to growing mash, and from chick-size grain and grit to intermediate size. In the past it was common practice simply to discontinue the starting mash at this time and feed a little grain letting the pullets get the protein part of their ration from whatever bugs they could find. It was even considered good for the pullets to rustle for their ration. It has now been definitely proved by Experiment Station tests that pullets must continue to get a properly balanced ration all through the growing period if they are to achieve their bred-in egg-laying capacity when they get to the laying house. Pullets require a variety of high quality animal and vegetable proteins in order to complete their growth and development and prepare themselves for the tough production job that lies ahead. It is now recognized that the economical growing of pullets is largely a matter of getting the birds to eat sufficient feed.

Having adequate feeding and watering equipment on the range will help induce the pullets to eat plenty of a balanced ration and at the same time it will save you labor. Each

This prevents mud puddles.

range shelter should be equipped with three feeders that are five feet long and supply feed from both sides. That's 30 feet of feeding space and two-thirds of it can be used for mash feeds and one-third for grain.

A barrel equipped with a float valve and shallow pan will provide a full day's or maybe even two days' supply of water for 100 to 125 pullets.

Adequate equipment saves the pullets and the poultry raiser

Plenty of good equipment not only supplies the needs of the pullets but also makes the work easier for the poultry raiser. On a properly equipped range, once-a-day service will keep the pullets supplied with everything they need to develop properly for their job of full-capacity egg production. In addition to a good range shelter and large-size feeders and waterers, a small portable storage building that can be moved to the range is also a time and labor saver. It can be used to store feed or both feed and water.

Be sure that the range is clean and that it has a supply of green feed and plenty of shade.

THE LAYING FLOCK

feed and manage them for maximum production

Moving to laying quarters

The first pullet egg you find on the range is a signal to move the birds to the laying house. And they should all be moved in; that is, you should not wait until all or most of the birds are in production, for handling them then and making a sudden change in their living conditions would be likely to throw the flock into a molt, or at least cause a setback in production. For the same reason, the pullets should be handled very carefully to avoid scaring them and making them wild. A good way to catch them is by closing the range shelter door the night before; and then instead of catching them in the shelter, place a catching coop outside the building and drive them in.

The laying house

The importance of room to live was emphasized for the starting period and the growing period. It is just as important in the laying house. Crowded laying quarters lead to adult mortality and lowered egg production. To be comfortable and have room to do a good laying job, each layer requires four square feet of floor space. More space will do no harm,

but attempting to cut down on the space by housing more birds starts you on the way to failure. The fact that more hens can roost in a house leads some people to believe that four square feet per bird is not necessary. But the birds need living space as well as roosting space in order to stay in good health and lay eggs to the maximum of their ability.

Supply plenty of fresh air

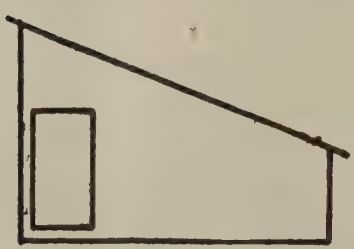
When you consider that the normal temperature of a hen is 107°; that she breathes about 32 times per minute and her pulse rate is about 340 beats per minute, it becomes obvious that she needs a large and constant supply of fresh air. The fact is a hen consumes about three times as much oxygen per pound of body weight as a horse or a cow.

A safe rule in planning ventilation is to provide one square foot of fresh air intake for every fifteen square feet of floor space. The open front is one of the most widely used systems of ventilation. The opening is usually on the south side of the house, 24 to 30 inches above inside floor level and two feet high. The length should be enough to provide the calculated number of square feet in relation to floor space. If this calculated length brings the opening too near the corners of the building, the height should be increased, for openings at the corner of the house are likely to create drafts. *(Continued on page 18)*

A well-equipped laying house — clean, light, airy, with plenty of room and plenty of feeders, fountains, nests.

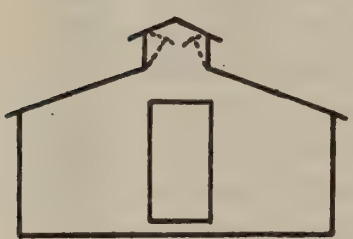
The laying house should be about 20 feet deep; for shallow houses are almost impossible to ventilate without drafts. When the house has enough depth, the front should be left open in all but the very coldest weather. Too little fresh air is much more likely to cause colds and other respiratory diseases than too much air.

The photographs on page 19 show some good laying houses, and the diagrams below illustrate six popular types. The Monitor and Semi-monitor types have roof outlets for stale air, which are a great aid to good ventilation. In addition to bringing the needed oxygen to the birds, good ventilation also helps prevent dampness or frost in the house.

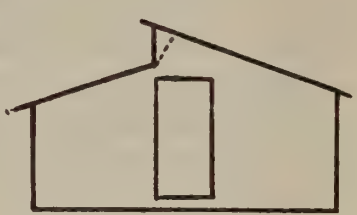


Shed Roof

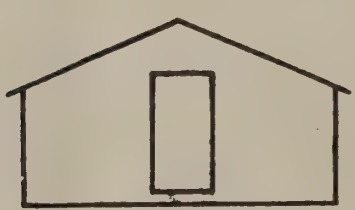
Combination Roof



Monitor Roof



Semi-Monitor Roof



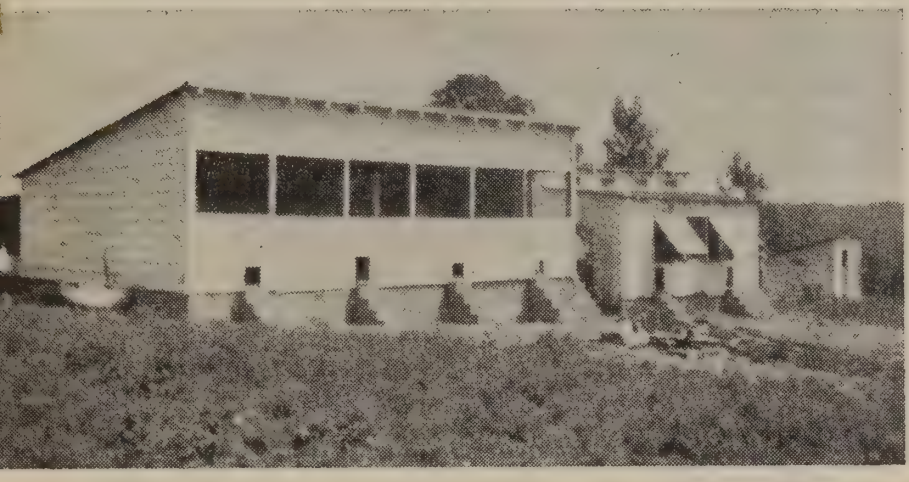
Even Span Roof

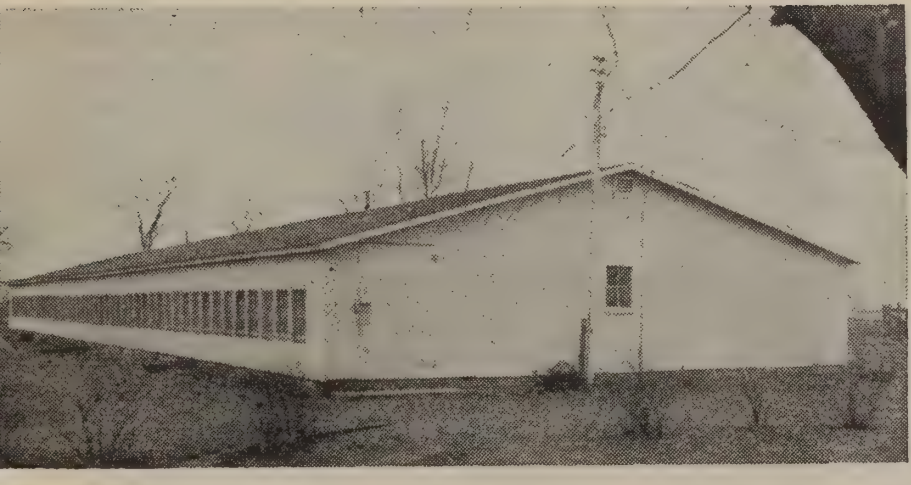
A-Shape Roof

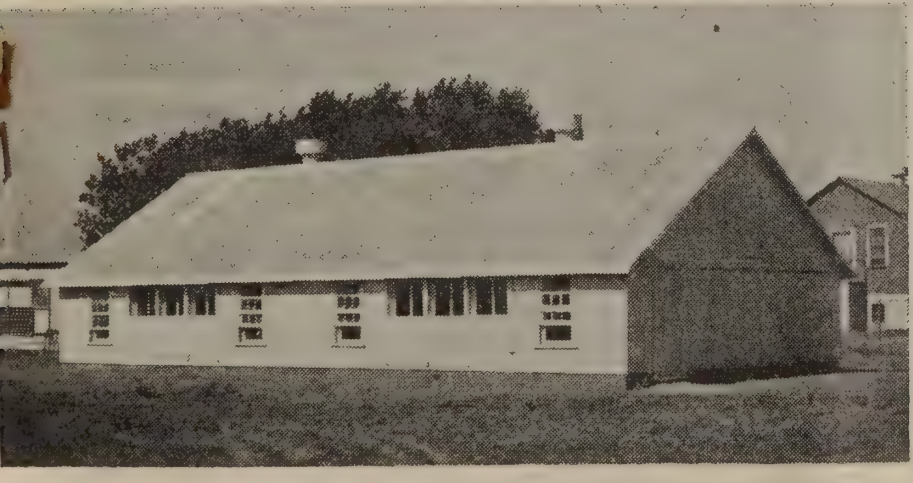
Insulate for efficiency

Roof insulation is worth while in any laying house, for it keeps the house warmer in winter and cooler in summer. A straw loft makes a good and inexpensive insulation. It should consist of about twelve inches of settled straw between the rafters and the roof where ceiling height permits. The ceiling height need not be more than 6½ feet; in fact, more headroom than that makes the house unnecessarily

Many comfortable houses look like the examples shown below







Photos Courtesy of Poultry Tribune

Another good example of poultry house. Note concrete floor, provision for light and ventilation.

cold. Wall insulation perhaps does not justify its cost in any but the coldest climates; but the walls of the house should be airtight to prevent any cross drafts.

Let the sunlight in

Sunlight should reach every part of the floor at some time during the day. The direct rays of the sun are one of the best germ-killers. Furthermore the ultra-violet rays in sunlight are important for the synthesis of vitamin D in the bodies of the hens. When light enters the house from all sides, the tendency to pile up litter is reduced, for hens usually scratch with their heads toward the light.

Experiments with six types of feeders proved that the low type (with lip about 7 inches from the floor) was preferred by the chickens and wasted less feed.

Deep litter

We recommend the deep, or built-up litter system because it saves labor and materials, and also offers other advantages. Under this system you leave the litter in the laying house all year. If there has been no disease problem some poultrymen recommend leaving it in for a second year — that is after you house a new batch of pullets.

You start with about two inches of dry absorbent litter on the floor when you house the pullets in late summer. Then you add one or two inches of fresh material about twice a month until it is about 6 to 8 inches deep. From then on, no more litter is added.

This deep litter should be kept loose and uncaked by raking it or turning it about twice a week. The deep litter forms a base of finely broken material that is very absorbent and also provides excellent floor insulation. Then too, the old deep litter is a valuable source of nutrients, particularly the animal protein factor.

Deep litter is not so likely to get damp as shallow litter, but if it does it should be dried by scattering hydrated lime over the surface at the rate of one pound per bird, and then stirring or raking it in.

Deep litter is easier and better.

Light for layers

You can step up your egg production by the use of artificial lights in fall and winter. Experiments have shown that 13 hours of light are ideal for maximum egg production. In fall and winter, the daylight must be extended, both at the beginning and end of the day, to make a 13-hour work day for the hens.

The best way to do this is with the Farm-Master Two Circuit Light Switch. This controls both bright and dim circuits. Dim lights come on for 15 minutes in the morning (to avoid startling the hens) then bright lights until daylight. In the evening bright lights continue the working day; then 15 minutes of dim light to give time for roosting before darkness. It's all automatic. You set the schedule, and the lights are turned on and off by a precision clock movement.

Equipment for the laying house

A well-equipped laying house should contain feeding hoppers for mash, grit, and oyster shell, water fountains, roosts with dropping boards, nests, and a storage bin for the convenience of the poultry raiser.

A five-foot long feeder, open on both sides, will provide space for 50 hens to get laying mash. Half this amount of space is enough for the grain and grit hoppers.

One 5 to 8 gallon fountain will supply water for 100 layers. A heater type fountain that takes the chill off water in winter is best.

Low or pit roosts, like those illustrated, are easy to build and they save labor. Provide about ten inches of roosting space per hen.

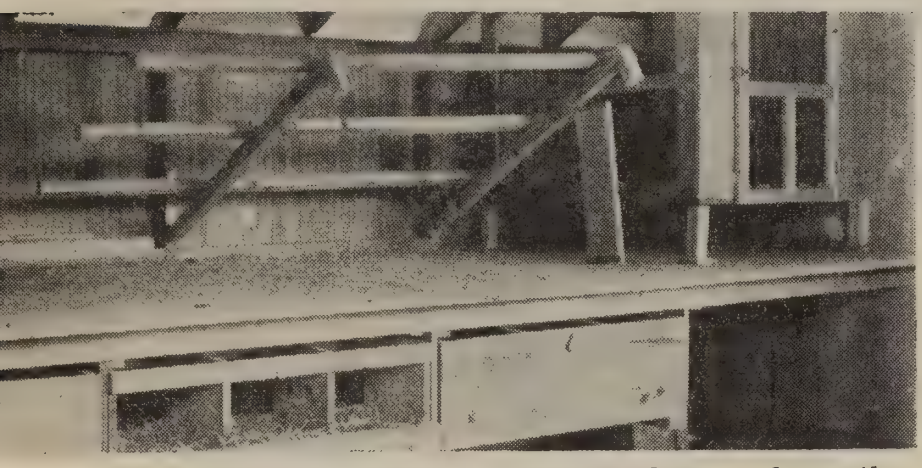
Having plenty of nests helps keep eggs clean and helps prevent breakage. There should be one nest for every five or six hens.

Watch egg quality

Nearly everybody likes a good egg. That's why cheerful, kindly, friendly people are called "good eggs." But let an egg have just a tiny blemish of some sort, and nearly everybody dislikes it. In fact, people are much fussier about the good eggs they eat than about the "good eggs" they eat with.

What are the small defects in eggs that make such a big difference in consumer-acceptance (and therefore in poultry-raisers' profits)? Some of them are watery whites,

Wire mesh under the roost poles keeps the birds away from the droppings.



The hinged roost makes it easy to clean underneath.

blood spots or meat spots, poor shape, small size, rough shells, mottled shells, and certain off-flavors. All of these defects may be inherited. That's another reason why it is important to buy chicks of good inheritance.

These defects can also be caused by faults in feed and management even in the case of birds that have the breeding to prevent them. For example, watery whites can result from long storage or high temperature. Blood spots and meat spots can increase from lack of green feed on range. Poor shell shape and texture and small size can come from lack of certain nutrients in the diet. Off-flavors can be caused by feeding onions, turnips, rape, or cabbage, or by storing eggs near strong-smelling things. But if the trouble is in the breeding, the very best feed and management cannot correct it.

There are other defects in eggs that are beyond the control of the breeder, but should be watched for by the poultry raiser. These are dark yolks which result from color-producing feed materials; large air cell from storing too long, or at high temperature, or in dry air; partly developed embryo in fertile eggs that have not been kept cool enough; and, of course, dirty eggs, the cause of which is obvious.

Pages 26 and 27 give pointers for handling market eggs to help you prevent defects and get premium prices for quality.

FEEDING THE LAYING FLOCK

Feed supplies the raw materials for eggs

Unlimited quantities of high quality feed are necessary to get maximum egg production. Body maintenance comes first with chickens; that is, energy and repair of body tissues takes priority on the feed, and if the hens get only enough feed for these purposes they will lay few if any eggs. The feed that is turned into eggs is the feed given to them in excess of maintenance requirements. It takes about 64 lbs. of feed per bird per year just to stay alive and in good health. From then on each tenth of a pound or less of extra feed is turned into an egg (up to the limits of the bird's bred-in laying ability, of course). This explains why it is actually more economical to give your layers all they can eat instead of just enough to keep them going. The feed they eat above maintenance requirements is the feed they pay you back for.

There are three commonly used feeding systems, briefly outlined below. Choose the one that best suits your conditions. Or vary the method according to the feeding instruction from the manufacturer of the feed you are using.

The all-mash system

This is for the poultry raiser who has little or no home-grown grain, or no local mixing facilities. It employs one mash feed that con-

tains the grain requirements of the birds as well as the protein-mineral-vitamin supplement. The mash should be kept before the birds at all times.

The mash-plus-scratch system

In this method, the mash used is of higher protein concentration, made to be fed approximately half and half with scratch grain. The grain is hand-fed, and the feeder can vary the amount according to the condition of the birds by watching their body weight and rate of laying.

The free choice system

In this system a mash still richer in protein is fed in one hopper while corn or grain sorghums are fed in another and oats or barley in a third. All the hoppers are kept filled and the birds are allowed to balance their own rations. Experiments have proved that birds are well able to do this, taking the proper proportion of mash and grains according to individual needs at the time.

Watch weight after laying starts

A common misconception is that the onset of laying means the end of the growing period. Growth is not complete when egg production starts, and for this reason the body weights of the birds should be watched closely for a while after the pullets are housed. Good body weight must be maintained in order to assure continuous fall and winter egg production and prevent a partial or complete molt of the flock.

Feeding extra grain or feeding a fattening mash at noon each day until cold weather sets in will help to hold or increase weight. Ground yellow corn or ground wheat may be mixed with milk to a crumbly consistency and fed at the rate of about four pounds per hundred pullets. This feed should be cleaned up in about fifteen minutes. Commercial fattening feeds mixed with water or fed in pellet form are also good.

Special feeding for breeding birds

If you are producing eggs for hatching purposes, you should not try to get by with ordinary laying feeds. The eggs of breeding birds must be able to produce healthy, vigorous chicks, and for this purpose the breeders need a feed with extra richness in vitamins and other nutrients that are not necessary for commercial egg production. These fortified breeder mashes cost more, but they are worth it because of the extra premiums you get for good hatching eggs.

Feeding for temperature extremes

Extremes in temperature — either hot or cold — call for special service on the part of the feeder. Otherwise egg production drops off.

Cold weather decreases in laying are brought on by the sudden temperature change, the fact that less water is consumed, and the fact that the birds eat more grain at the expense of laying mash. To combat these conditions, a warm, moist laying mash should be fed each day at noon. The regular laying mash should be mixed with water — or preferably milk — to a crumbly consistency. This should not be fed before noon, for then it would merely take the place of the mash that would regularly be eaten in the morning. The idea is to increase the mash consumption. After this practice is started, it must be continued regularly until spring, and then gradually discontinued. Take the chill off the water during cold spells, too, since this will help stimulate the heavy drinking of water necessary to heavy laying (eggs being 65% water).

Very hot spells in summer take away the hens' appetites, and the discomfort of the extreme heat, especially if there is a lack of proper ventilation in the laying house, will cause the birds to slow down. In such weather the layers should be confined close to a supply of laying mash until noon. If they are permitted to range from the morning on, they will not eat enough balanced ration for good egg production. Resume the feeding of a wet laying mash, mixed with milk or water, at noon or just before range is provided. About four pounds per hundred is the right amount.

Culling increases profits

Culling should be a more or less continuous process in poultry raising — from the brooder

stage on. For if you keep a pullet that doesn't do her share of laying (but that does do her share of eating!) she steals all the profits you get from a good layer. Culling is a science and an art. Many poultry raisers have the job done by an expert — the fee is usually moderate — and consider it well worth while. On the other hand, many poultry raisers have become expert cullers themselves. Culling is something that can be taught much better by demonstration than by any printed instructions. However, as a general guide at least, we are listing below some of the commonly accepted points on which birds should be culled.

Here's a point to remember whenever culling is done: Some birds that are potentially good layers might happen to be in a temporary non-laying period when the culling is being done and therefore be removed from the flock; whereas if they were not culled they might return to profitable production. This is one of the things that no table of culling points can take into consideration.

CULLING GUIDE

	Birds That Are LAYING:	*Birds That Are NOT LAYING:*
Plumage ..	Close-feathered, dry, worn-looking	Loose-feathered, oily, smooth-looking
Shanks and Beak ...	Pale; short, strong beak	Yellow; long, thin beak
Comb and Wattles..	Full, glossy, red, warm	Shrivelled, dull, pale, cold
Earlobes ..	Large, glossy	Shrivelled, dull
Eyes	Bright, prominent	Dull, sunken
Face	Firm, unwrinkled	Slack, wrinkled
Keel	Long, down-sloping	Short, up-sloping
Chest	Soft, full	Hard, thin
Back	Long, broad	Short, narrow
Abdomen .	Soft, pliable	Hard, contracted
Pelvic Bones ..	Thin, pliable, wide-apart	Thick, stiff, close together
Skin	Thin, soft	Thick, underlaid with fat
Vent	Large, moist, white, oblong	Small, dry, yellow, puckered

HANDLING EGGS FOR MARKET

If you handle eggs as if they were valuable they will become more valuable; for eggs are graded on most markets and better prices are paid for better grades. After they are produced, eggs require just as much care as high quality milk does in order to bring them to market in good, palatable condition.

Cool eggs quickly

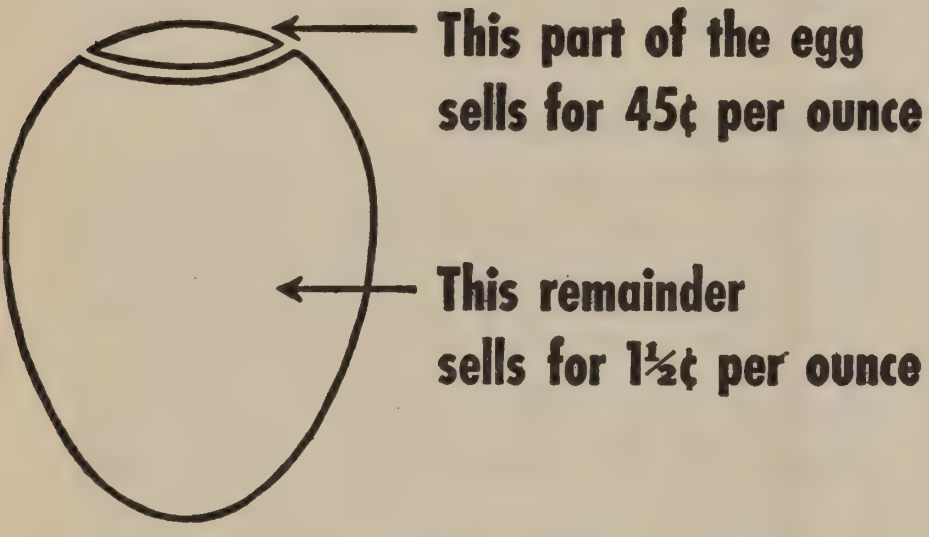
Prompt cooling is one of the most important factors in preserving the quality of eggs. They should be gathered in a wire basket rather than a solid pail so that the body heat will be quickly dissipated. Prompt cooling to remove body heat is one of the most important points in maintaining egg quality.

The eggs should be taken to a cool, moist storage place just as soon as possible after they are laid. It is said that an egg laid in the morning is three days old that evening if it is allowed to remain in the nest in the summertime. That is, in hot weather an egg ages as much in a few hours as it would in three days at a temperature of 65°. The eggs should be gathered at least twice, and preferably three times a day. They should be transferred immediately to a cool place — a cellar or basement is good if it is free from objectionable odors. There should be free circulation of air

around the stored eggs; and if the storage place is dry it should be artificially moistened. A bed of sand that is kept wet is a good way.

Protect the most valuable part of the egg

The age of an egg is measured by the size of the air cell; for when it is laid it has no air cell, the cell being formed by the shrinkage of the contents. An increase of ⅛ inch in the depth of the air cell lowers the grade of eggs so that the price is reduced by at least three cents on most markets. It has been figured that on the basis of weight loss involved, the part of the egg that evaporates is worth 45 cents an ounce while the remainder of the egg is worth 1½ cents an ounce.



Market eggs should be infertile

The old idea that the presence of roosters increases egg production has been proved to be wrong. Unless you are producing hatching eggs, keep the roosters away from the laying flock. Exposure of fertile eggs to summer temperature for only 24 hours will make them unfit for human consumption.

Keep eggs clean

Dirty eggs usually sell at a discount. If dirty eggs are found they should be cleaned by rubbing with a piece of abrasive cloth — not washed. However, it is much easier to keep them clean than to clean them after they get dirty. Clean dry litter, clean dry straw in the nests, and gathering eggs several times a day all help keep them clean. The eggs should be neatly packed for market in clean cases, using clean fillers. In packing, the small end of the egg should be down.

PRODUCING POULTRY MEAT

The production of broilers and fryers and other classes of meat birds is incidental to egg production with many poultry raisers. On the other hand, meat production — especially of broilers and fryers — is often the specialized business of the poultry raiser. In either case, the problem is to produce plump, tender, premium-quality birds in the shortest possible feeding time, and therefore at the lowest possible cost in feed and labor. To do this, you must start with well-bred chicks, follow with a sound management program, and feed ample quantities of a high-quality, properly-balanced ration.

Feeding meat birds

Growth or putting on meat is essentially a storage of protein in the body. Therefore, to get well-finished broilers or fryers quickly it is necessary to supply in the ration enough carbohydrates for the energy requirements of the birds and plenty of the right variety of animal and vegetable proteins which are the building blocks of muscle tissue. Certain minerals and vitamins are necessary in the ration to enable the birds to utilize the other nutrients properly. Good commercial broiler rations provide these feed elements in the proper balance.

The so-called fattening feeds are usually intended for putting older birds into good market condition — producing roasters and capons or increasing the weight of hens that are past their laying value.

Producing poultry meat

The management of chicks or growing stock as outlined elsewhere in this manual applies in general to the management of birds grown for meat purposes. Birds being fed for market are usually confined more closely. Often broilers and fryers are raised entirely in batteries from day-old chicks to marketing, never touching the ground. Batteries several decks high permit the growing of large numbers of birds in a relatively small building.

SOME COMMON TROUBLES OF POULTRY

Average livability can easily be increased

The American Veterinary Medical Association investigated poultry raising through their Poultry Committee and found that adult mortality averaged 40% throughout the country. This means that when the average farmer houses 100 five-months-old pullets in September, 40 of them will be dead or worthless by the following July. This loss is much bigger than it should be in view of the available information on good poultry management and feeding. In other words, about 90% of this loss is due to the failure on the part of poultry raisers to use the information that is available. Good housing and good feeding can do much to stop the high average adult mortality. Sound sanitation practices can carry the good work much farther.

There are a number of diseases that poultry can get; and of course a number of ways of treating them. But it is much better to avoid disease by buying well-bred stock and giving it the right kind of feed and care — on a program such as this booklet outlines. If disease does strike — call your veterinary or the state poultry specialists who are best able to cope with the situation.

This section of the manual is limited to mites, lice, and worms — parasites that are common enough that you should take precautions against them.

Mites

Mites are blood suckers, and one of the most harmful because they multiply faster than a calculating machine. Their eggs hatch in two days at summer temperatures and these mites lay more eggs in less than a week! A blitz of these parasites can cause real damage in short order, so frequent examination of cracks and crevices in the walls of the house, nests and roosts is really important, particularly in summer.

These pests may be controlled and eliminated from the house by a thorough painting or spraying with a good nicotine sulphate type of dip or disinfectant. If the infestation is light, treatment of the roosts, roost supports, nests, and adjacent walls should be sufficient

— but with heavy infestations it may be necessary to apply it to the whole interior of the house, including the roof.

Lice

Poultry lice are scavengers — that is, the more common kinds live on the scurf or dead skin on a chicken's body. They stay on the birds in contrast to the mites, which commonly leave the chickens after feeding. Lice lay eggs that hatch in about seven days and the young become mature enough to lay more eggs in ten days.

Sodium fluoride, used by the pinch method, or as a dip at the rate of a pound to 15 gallons of water gives sufficient control. Nicotine sulphate should be applied to the roost poles with a brush or small oil can about an hour before roosting time. The nicotine fumes kill the lice during the night, but the eggs that have been laid on the feathers are not affected. A second treatment must be given in ten days to kill these lice that hatch from these eggs before more can be laid. All the birds must perch on the roosts when these treatments are given. Failures with nicotine sulphate can be traced to hens that are not exposed to the treatment or to an interval of more than ten days between treatments.

Worms

Three types of worm may commonly cause poultry losses, if they are present in large numbers: round worms, cecal worms, and tape worms. The eggs of round worms are picked up from the ground. The worms hatch and lay more eggs while living in chickens and these eggs in turn passed out in the droppings.

Tobacco powder prepared for the purpose, mixed two pounds to 100 pounds of mash, is an effective de-wormer for round worms.

Cecal worms are small (up to ½ inch) greyish-white worms that infest the blind gut. A good phenothiazine type worm remedy is effective against them. Give one bomb per dose.

There are worm remedies that are intended for flocks that have both round worms and cecal worms. They contain nicotine for the former, and phenothiazine for the latter.

Tape worms are flat segmented or jointed worms that spend a part of their life cycle in various types of insects, including grubs, beetles and flies. Poultry in eating these insects in large numbers become infested. The tape worm is most serious, because treatments which prove helpful in reducing the size of parasitic family are, nevertheless, not efficient in removing the heads of the parasite. Treatments have a shearing effect. They remove the tails or segments, but the tape worms grow new ones!

As chickens grow older they have greater resistance to the poisons or toxins thrown off by these three types of parasites. Damage to young chickens is severe.

It is doubtful if many chickens grow to maturity without some worm infestation. Here again sanitation and prevention are most important — particularly with respect to tape worms, since there is no permanent relief from a heavy infestation.

Summer camps for pullets, dry, sanitary conditions in the laying houses, and fly control, particularly in the spring, are important.

All hens have some worms. As long as production is satisfactory, it is better to let them live with these parasites than it is to try to keep them absolutely free. Unnecessary treatments for laying hens disturb normal body functions and seriously disrupt production.

Keep 'em healthy . . . only healthy hens do a good laying job.

SAVE FEED

by raising FARM-MASTER CHICKS and practicing GOOD MANAGEMENT

Feed is more important than ever this year because there is none too much of it. Perhaps the best way to save feed is by feeding it to the kind of stock that is bred for production — like Farm-Master chicks. Good birds do not eat less than poor birds; but they return more eggs for each pound of feed, with the result that you use less feed per dozen eggs.

Once you start with good chicks, there are five more things you can do to save feed: (**1**) Provide plenty of space both in the brooder house and the laying house. When birds are overcrowded mortality goes up and production goes down. (**2**) Use feed hoppers with wide lips and do not fill them more than half full. This keeps the birds from "beaking" out the feed. (**3**) Provide plenty of good range, for a tender green pasture is rich in proteins and other nutrients and therefore saves feed. (**4**) Cull your flock rigidly and often. Non-producers do not pay for the feed they eat. (**5**) Store your feed in clean, dry storage rooms that are proofed against rats and mice.

A final point in this feed-saving program is to feed your good birds plenty of a well-balanced ration with all the nutrients plus vitamin B_{12} and the antibiotics. Cutting down on the ration does not save feed because such a practice invites poor health and poor production, which means the feed you do use is wasted.

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